

Chapter 1 Bridge Inspection Organization Requirements

1.01 General

The National Bridge Inspection Standards (NBIS) are published in the Code of Federal Regulations, 23 CFR 650, Subpart C. The NBIS sets the national standard for the proper safety inspection and evaluation of bridges and apply to all structures defined as highway bridges located on all public roads. Washington State's bridge inspection organization is required to meet the NBIS and functions under the authority of the Federal Highway Administration (FHWA) and state law.

In Washington State, the bridge inspection organization is structured as a collaborative effort by the Washington State Department of Transportation (WSDOT) Bridge Preservation Office, WSDOT Highways and Local Programs Office, most county roadway agencies, and many city roadway agencies. Collectively, all state and local agency owned bridges subject to the NBIS are managed under this organization.

With respect to the organization's activities, the NBIS requires the following:

- Performing regularly scheduled in-service bridge inspections.
- Maintaining bridge records.
- Maintaining a state bridge inventory.
- Submitting selected state bridge inventory data to FHWA for incorporation into the National Bridge Inventory (NBI) (timely reporting of significantly damaged bridges to the FHWA Washington Division).
- Maintaining current load ratings on all NBI structures.
- Maintaining current scour plans of action for all bridges considered vulnerable to scour.
- A quality control and quality assurance program.

There are a few activities that are not explicitly required by the NBIS, but are either strongly implied or required by other FHWA policies:

- Performing scour evaluations for all bridges over water.
- Maintaining personnel qualification records and an inspector certification program.
- Responding to FHWA Technical Advisories, FHWA Action Memoranda, and other policy or information requirements provided by the FHWA Washington Division Bridge Engineer.

There are a few more activities addressed in this manual which are clearly part of managing bridges but not required by the NBIS. These include:

- Bridge Management System data, recommended but not required by Title 23 Code of Federal Regulations 500 Subchapter F.

- Bridge repair management.
- Managing non-NBIS structures.

The NBIS applies to all publicly-owned highway bridges longer than 20 feet located on public roads. The WSDOT bridge inspection organization, however, is only responsible for state and local agency-owned bridges. Federally-owned bridges are inventoried and managed by a variety of federal agencies. Privately-owned highway bridges of any length are not included in this requirement, although WSDOT encourages private bridge owners to inventory, inspect, and maintain their bridges in conformance with the NBIS and this manual.

A. Definitions

Some definitions for use with this manual are as follows:

Bridge – The NBIS gives the following definition: “A structure including supports erected over a depression or an obstruction, such as water, highway, or railway, and having a track or passageway for carrying traffic or other moving loads, and having an opening measured along the center of the roadway of more than 20 feet between undercopings of abutments or spring lines of arches, or extreme ends of openings for multiple boxes. It may also include multiple pipes, where the clear distance between openings is less than half of the smaller contiguous opening.”

Bridge Inspection Organization – A state department of transportation that is required by the NBIS to inspect, or cause to be inspected, all highway bridges located on public roads that are fully or partially within the state’s boundaries, except for bridges that are owned by federal agencies. The bridge inspection organization is managed under the guidance of a Statewide Program Manager, with the intent and responsibility to meet the requirements of the NBIS.

Bridge Inspection Program – An organizational unit that functions as part of the Bridge Inspection Organization and that meets the requirements of 23 CFR 650.307 and this manual. Agencies that meet this requirement are led by delegated program managers, and all agencies work in coordination with the Statewide Program Manager.

Bridge Condition Inspection Training (BCIT) – A comprehensive bridge inspector training course offered by WSDOT which FHWA accepts as equivalent to the Safety Inspection of In-Service Bridges FHWA-NHI-130055 course.

Bridge File – A file containing historic and current information about a bridge, and meeting the intent of Chapter 2 of the *AASHTO Manual for Bridge Evaluation*.

Bridge Inspection – The condition inspection and evaluation of in-service bridges.

Bridge Reporting Database – The database which stores the Washington State Bridge Inventory System (WSBIS) data, combining data from the BPO and HLP databases.

BridgeWorks – The software application that is used to perform bridge inspections and which updates data in the various inventory databases.

Critical Finding – Also known as critical damage in the state of Washington.

Fracture Critical Member – A member in tension, or with a tension element, whose failure would probably cause a portion of or the entire bridge to collapse.

H&LP Bridge Inventory – The inventory of local agency bridges kept in the H&LP database. The Bridge Reporting Database draws data from this database regularly for inclusion into WSBIS.

Inventory Route – The route for which the applicable inventory data is to be recorded. The inventory route may be on the structure or under the structure. Generally inventories along a route are made from west to east and south to north.

Inventory Record – Data which has been coded according to this manual for each structure carrying public road traffic or each inventory route which goes under a structure.

Local Agency – Generally refers to city or county bridge owners but also includes bridge owners other than state and federal.

National Bridge Inspection Standards (NBIS) – Title 23 Code of Federal Regulations 650 Part C defines the NBIS regulations, and establishes requirements for inspection procedures, frequency of inspections, qualifications of personnel, inspection reports, and preparation and maintenance of a state bridge inventory. The NBIS apply to all structures defined as bridges located on all public roads.

Public Road – Any road under the jurisdiction of and maintained by a public authority and open to public travel.

National Bridge Inventory (NBI) – The aggregation of structure inventory and appraisal data collected to fulfill the requirements of the National Bridge Inspection Standards. Each state shall prepare and maintain an inventory of all bridges subject to the NBIS.

Washington State Bridge Inventory System (WSBIS) – The aggregation of structure inventory and appraisal data collected and used to fulfill the requirements of the NBIS and additional data used to manage the state and local bridge inventories. This data is stored in the Bridge Reporting Database.

The State – The Washington State Department of Transportation (WSDOT).

State System Bridge Inventory – The inventory of state bridges kept in the BPO database. The Bridge Reporting Database draws data from this database regularly for inclusion into WSBIS.

Statewide Program Manager – The individual in Washington State with overall responsibility to ensure that all the bridge inspection programs meet the requirements of the NBIS.

Delegated Program Manager – Individuals with functional responsibility to ensure that bridges managed by their bridge inspection program meet the requirements of the NBIS.

Bridge Inspection Committee – A committee of state and/or local agency representatives that provides overall advisory input to the bridge inspection organization within the state of Washington. The list of members is in the [Foreword](#) of this manual.

1.02 Description of Bridge Inspection Organization

Washington State's bridge inspection organization is required by the NBIS, led by the State Bridge Preservation Engineer (who serves as the Statewide Program Manager) and advised by the Bridge Inspection Committee. The bridge inspection organization has the following responsibilities:

- Establishing policies and procedures.
- Maintaining the state bridge inventory and regularly reporting NBI data to the FHWA.
- Maintaining personnel qualification records and an inspector certification program.
- Maintaining a quality control and quality assurance program.

All the other activities required by the NBIS are the responsibility of the various bridge inspection programs operating within state and local agency governments. The composition and size of each inspection program varies widely, generally depending on the number of bridges managed by the agency. Two state offices play key roles in the organization:

- **Bridge Preservation Office (BPO)** – This office is dedicated to running the bridge inspection program for all state owned bridges. This includes bridges managed by State Parks, General Administration, and other state agencies with bridges subject to the NBIS. BPO also manages bridges on the border with Oregon and Idaho. BPO is led by the Bridge Preservation Engineer.
- **Highways and Local Programs (H&LP)** – This office provides support and services to local agency bridge inspection programs. In particular, H&LP provides training, manages the inspector certification program, and manages many aspects of the local agency bridge inventory data. The WSDOT Local Agency Bridge Engineer functions as a delegated program manager for all local agency bridges.

As mentioned above, local agencies have a wide variety of bridge inspection programs, which generally fall into the following categories:

- Local agencies with a delegated program manager and bridge inspection staff working directly for him/her.
- Local agencies without a delegated program manager but with bridge inspection staff.
- Local agencies without a bridge inspection program. These agencies, usually smaller and mid-sized cities, generally have agreements with other agencies, usually the surrounding county, to inspect and manage their bridges.

The bridge inspection organization, and the various programs within it, are staffed by individuals who have defined roles and responsibilities described as follows.

A. Statewide Program Manager (SPM)

The Statewide Program Manager is the individual in Washington State who leads the bridge inspection organization. This position is held by the Bridge Preservation Engineer, who must ensure that the organization fulfills its NBIS responsibilities. To qualify as the Statewide Program Manager, WSDOT requires this individual to have both a current Structural Engineering and Professional Engineering license and qualify as a certified team leader. The Statewide Program Manager must also be recertified on a regular basis by attending a refresher training class accepted by FHWA. The certification process is described in detail in [Chapter 7](#).

B. Delegated Program Manager (DPM)

A delegated program manager assumes some functions for the program manager for the selected subset of bridges under his or her direct control. To qualify as a delegated program manager, the individual must meet, at a minimum, the program manager requirements as described in the NBIS. Delegated program managers must be recertified on a regular basis by attending a refresher training class accepted by FHWA. The certification process is described in detail in [Chapter 7](#).

Note that though delegated program managers perform functions for the bridge inspection organization, overall responsibility for NBIS compliance still resides with the Statewide Program Manager.

C. Team Leader (TL)

A team leader is in charge of an inspection team and responsible for planning, preparing, and performing the field inspection of bridges. The team leader also makes repair recommendations and is responsible for initiating the critical damage procedures including full bridge closure if deemed necessary. To qualify as a team leader, the individual must meet, at a minimum, the team leader requirements as described in the NBIS. Team leaders must be recertified on a regular basis by attending a refresher training class accepted by FHWA. The certification process is described in detail in [Chapter 7](#).

D. Assistant Inspector

An assistant inspector may accompany the team leader during field bridge inspections. Typical duties include helping to organize bridge inspection trips, taking measurements, compiling notes, and taking photographs. When assistant inspectors also fully participate in the inspection process and prepare inspection reports under the direct supervision of a team leader, this work provides qualifying experience towards certification as a team leader.

The NBIS does not set specific training or educational requirements for assistant inspectors. However, bridge inspector training is recommended and available to all assistant bridge inspectors to serve as a good foundation for beginning inspectors as well as being a requirement for advancement to team leader.

E. Load Rating Engineer (LRE)

A load rating engineer manages all aspects of maintaining current and accurate load ratings for bridges he/she is responsible for. Responsibilities include reviewing inspection reports for changed conditions that warrant revisions to the load ratings on file, revising load ratings as needed, creating new load ratings for new bridges, and ensuring that the findings from load ratings are implemented. In particular, the load rating engineer must track bridges that require posting and ensure that the bridge inventory has current data from the load ratings.

To qualify as a load rating engineer, the individual must have a current Professional Engineering license and completed the Fundamentals of LRFR FHWA-NHI-130092 and LRFR for Highway Bridges FHWA-NHI-130092A classes.

F. Underwater Bridge Inspection Diver (UBID)

To qualify as an underwater bridge inspection diver, the individual must meet, at a minimum, the underwater bridge inspection diver requirements as described in the NBIS. The certification process is described in detail in [Chapter 7](#).